CHANGE
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *13 October 1980*

Direct Support, General Support, and Depot Maintenance Manual

Including Repair Parts and Special Tools Lists

RADIO SETS AN/PRC-74B (NSN 5820-00-935-0030)

AND AN/PRC-74C (NSN 5820-00-177-1641)

POWER SUPPLIES PP-4514/PRC-74 (NSN 5820-00-942-0821)

AND PP-4514A/PRC-74 (NSN 5820-00-177-4581)

AND BATTERY BOXES CY-6121/PRC-74 (NSN 5820-00-908-3127),

CY-6314/PRC-74 (NSN 5820-00-935-0382)

AND CY-6314A/PRC-74 (NSN 6135-00-156-3934)

TM 11-5820-590-35-1, 9 July 1968, is changed as follows:

1. The title is changed as shown above.
2. New or changed material is indicated by a vertical bar in the margin.
3. Remove and insert pages as indicated in the page list below.

Remove	*Insert*
1-1 and 1-2	1-1, 1-2, and 1-2.1
2-3 through 2-6	2-3 through 2-6
3-3 and 3-4	3-3 and 3-4
3-7 through 3-12	3-7 through 3-12
4-5 and 4-6	4-5 and 4-6
4.1-1 and 4.1-2	4.1-1 and 4.1-2

4. File this change sheet in the front of the manual for reference purposes.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

DISTRIBUTION:

ACTIVE ARMY, USAR, ARNG: To be distributed in accordance with DA Form 12-51, DS & GS Maintenance requirements for AN/PRC-74 radio set.

CHAPTER 1

FUNCTIONING OF RADIO SET

Section I. SYSTEM FUNCTION

1-1. Scope

a. This manual contains instruction for direct support (DS), general support (GS), and depot maintenance of Radio Set AN/PRC-74B (radio set) and Radio Set AN/PRC-74C (radio set). Receiver-Transmitter Radio RT-794B/PRC-74 (rt unit) and Receiver-Transmitter Radio RT-794C/PRC-74 (rt unit) contain all electronic circuits of the respective radio sets. Unless otherwise specified, references in this manual to AN/PRC-74B and RT-794B/PRC-74 apply to AN/PRC-74C and RT-794C/PRC-74 respectively. With the aid of this manual, direct support, general support, and depot maintenance personnel can troubleshoot, test, align, and repair the AN/PRC-74B. A list of tools, materials, and test equipment for direct support, general support, and depot maintenance is included.

b. The parts location illustrations in this manual have abbreviated reference designations, except for intermodule connections and adjustable parts. To obtain the complete designation, add the numbers in the chart below to the numbers on the illustrations. For example, Q4 in figure 2-6 becomes Q204. Reference designations for Power Supply PP-4514/PRC-74 are complete as shown in the figures. Unless otherwise specified, references in this manual to Power Supply PP-4514/PRC-74 apply to Power Supply PP-4514A/PRC-74.

Figure No.	*Add to reference designations*
2-6	200
2-8	300
3-3	600
3-4	600
3-5	600
3-6	600 or 6000 (Add 600 to only those that are not 3-digit numbers and 6000 to 3-digit numbers beginning with 1)
3-7	600
3-9	700
3-10	700
3-11	700
3-13	400
3-15	500
3-32	600
3-35	700
3-36	700
3-37	400
3-38	500
4.1-2	800
4.1-3	800
4.1-4	800
4.1-5	800
4.1-8	300
4.1-9	300

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWOs) pertaining to the equipment.

1-2.1. Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

1-2.2. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 735-11-2/NAVSUPINST 4440.127E/AFR 400-54/MCO 4430.3E and DSAR 4140.55.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-2.3. Reporting Equipment Improvement Recommendations (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

Section II. GENERAL FUNCTION

1-3. Introduction

a. This section describes the general functional operation for the radio set. It is divided into block diagram descriptions of the transmit and receive modes of operation.

b. An interconnection diagram of Radio Set

AN/PRC–74B is shown in figure 6–1. The modules and chassis-mounted circuits of the radio set serve dual purposes by operating in both the receive and transmit operational modes. Mode selection within the radio set is accomplished by transmit-receive control relays mounted in each module. These relays normally connect the radio set modules and circuits to a receive configuration, with signal flowing left-to-right from the antenna to the headset (A, fig. 6–2). When a transmit mode is selected, the transmit-receive control relays interconnect the transmit portions of the modules and circuits. During this time, signal flow is left-to-right from the telegraph key, automatic Keyer KY–468/GRA–71 (automatic keyer), or the microphone to the antenna (B, figure 6–2).

1–4. Receive Mode of Operation

a. General. The function of the radio set when connected for the receive mode of operation, as shown in A, figure 6–2, is to receive a radiofrequency (RF) signal in the high frequency range from 2 megacycles (mc) to 17,999 mc; to heterodyne the RF signal with a locally generated synthesizer signal that is 1.75 mc above the input frequency; to convert the RF into a 1.75-mc intermediate frequency (IF); to remove the voice or telegraph intelligence from the IF; and to apply the intelligence to a headset. Two secondary modes may be utilized when the radio set is in the receive mode. The secondary modes are operate and calibrate. The operate secondary mode is used for normal communication operations. The calibrate secondary mode provides a means of periodically calibrating the tuning circuits for optimum performance.

b. Receive-Operate. When the receive mode has been selected and the radio set is in the operate condition, the RF input from the antenna is connected to the RF module through the power amplifier module. The power amplifier module provides the proper load for the RF input and is tuned for maximum RF signal reception. The RF module, which operates in conjunction with the synthesizer module for the heterodyning process, consists of RF tuning, synthesizer tuning, RF amplification, and mixing circuits. The synthesizer module consists of four step oscillators that are selected by front panel controls. The oscillator output frequencies are selected to produce local oscillations 1.75 mc higher than the RF input. The synthesizer output is applied to the RF module and is heterodyned with the tuned RF input. The resulting 1.75–mc difference output of the RF module is the intermediate frequency. The RF gain of the radio set is controlled by a gain control circuit that applies an output to the RF module.The **MC (MHz) step frequency selector** switch of the synthesizer is geared to band switches within the RF module so that the proper RF bands of operation are selected when the synthesizer frequency is changed. The 1,750-kilocycle (kc) lower sideband (lsb) IF output of the RF module is supplied to the IF audio module. The IF audio module receives a 1,750-kc signal from the frequency generator module. The 1,750-kc signal in the frequency generator is produced by a highly stable, free-running crystal oscillator. The 1,750-kc signals are applied to a demodulator circuit that removes the audio intelligence in the IF audio module. The audio signal output is then amplified and supplied to the headset. The IF gain of the IF audio module is controlled by an IF gain input from the gain control circuits.

c. Receive-Calibrate. The calibrate secondary receive mode of operation is initiated by pressing the PUSH TO CALIBRATE switch on the radio set front panel. When the switch is pressed, a 12-volt calibrate input is applied to the power amplifier, synthesizer, frequency generator, and IF audio modules. The 12-volt calibrate signal energizes circuits in these modules which allow the operator to calibrate the radio set tuning circuits. In the synthesizer module, the 1-kc step selection circuits are effectively disabled so that the synthesizer output will be incremented in 10-kc steps. In the power amplifier module, the 12-volt calibrate signal disables the RF output to the RF module. To replace the RF output of the power amplifier module, a 10-kc calibration signal is applied to the RF module by the frequency generator module. The 10-kc calibration signal

trols to 2.000 mc. Set the OFF-ON-TUNE control to ON.

i. Turn the R. F. GAIN control fully clockwise, and adjust the PEAK NOISE control for maximum audio output. If necessary, tune the signal generator so that an output of 1 kc is shown on the frequency meter.

j. Adjust the ANT TUNE and ANT LOAD controls for maximum audio output.

k. Adjust resistors R206 and R210 (fig. 2–1) for maximum output. Adjust T717 for maximum output. Check for an ME–30B/U meter indication of not less than 0.707 volt rms.

l. Repeat the procedures in *h* through *j* above with the radio set tuned to frequencies of 4.000, 7.000, 12.000, and 17.000 mc and the signal generator tuned to 4.001, 7.001, 12.001, and 17.001 mc for each frequency.

m. Check for a meter reading of not less than 0.707 volt rms at each frequency setting. If the indication is less than 0.707 volt rms for any of the frequency settings, the radio set is not functioning properly in the receive mode and further testing is required to isolate the defective module (para 2–6).

2–5. Radio Set Transmit Mode Test

Many circuits in the radio set are common to both the transmit and receive modes; therefore, when the transmitter is not working properly, the radio set should first be checked as described in paragraph 2–4 before performing the transmitter test in *a* through *h*.

a. Connect a 50-ohm, 20-watt dummy load and the ME–30B/U to the opposite ends of a T-connector.

b. Connect the T-connector as illustrated in figure 2–2.

c. Tune the radio set to 11.555 mc as described in TM 11–5820–590–12–1.

d. Hold the OFF-ON-TUNE selector switch at the TUNE position.

e. Adjust resistor R835 (fig. 2–3) until the unmodulated output power (as indicated on the ME–30B/U) is 25.5 volts rms.

f. Connect the microphone to one of the AUDIO connectors.

g. Speak or whistle into the microphone and check for power output peaks of 24.5 to 37 volts on the ME–30B/U.

h. Repeat the procedures in *e* through *h* above with the radio set tuned to frequencies of 2.000, 4.000, 7.000, 12.000, and 17.000 mc. Check for a continuous wave output power of not less than 24.5 volts rms at all test frequencies and modulated power output peaks of 24.5 to 37 volts. If the meter indications are not within the range specified, the radio set is not functioning properly in the transmit mode and further testing is required to isolate the defective module (para 2–7).

2–6. Receiver Troubleshooting (fig. 2–1)

With test equipment connected as shown in figure 2–2 (receive), turn the radio set on and perform the checks in *a* through *d*.

Note. Unless otherwise stated, restore all module inter-connections at the conclusion of each test.

a. Power Supply Module. Use Multimeter ME–26B/U, and check the radio set power supply module as follows:

(1) Connect the multimeter between pins 7 and 8 of TB201.

(2) Check to see that the multimeter indicates between 8.4 to 9.6 volts.

(3) If this indication is not obtained, the power supply module is defective. Replace the power supply module (para 2–12).

b. Frequency Synthesizer. Check receiver sensitivity; use the AN/URM–25D in place of the frequency synthesizer.

(1) Disconnect P601 from J703 of the RF module.

(2) Connect the signal generator to J703.

(3) Set the signal generator frequency to 1.750 mc above the radio set frequency setting (as indicated on the front panel).

(4) Set the signal generator output level to 100 millivolts (mv).

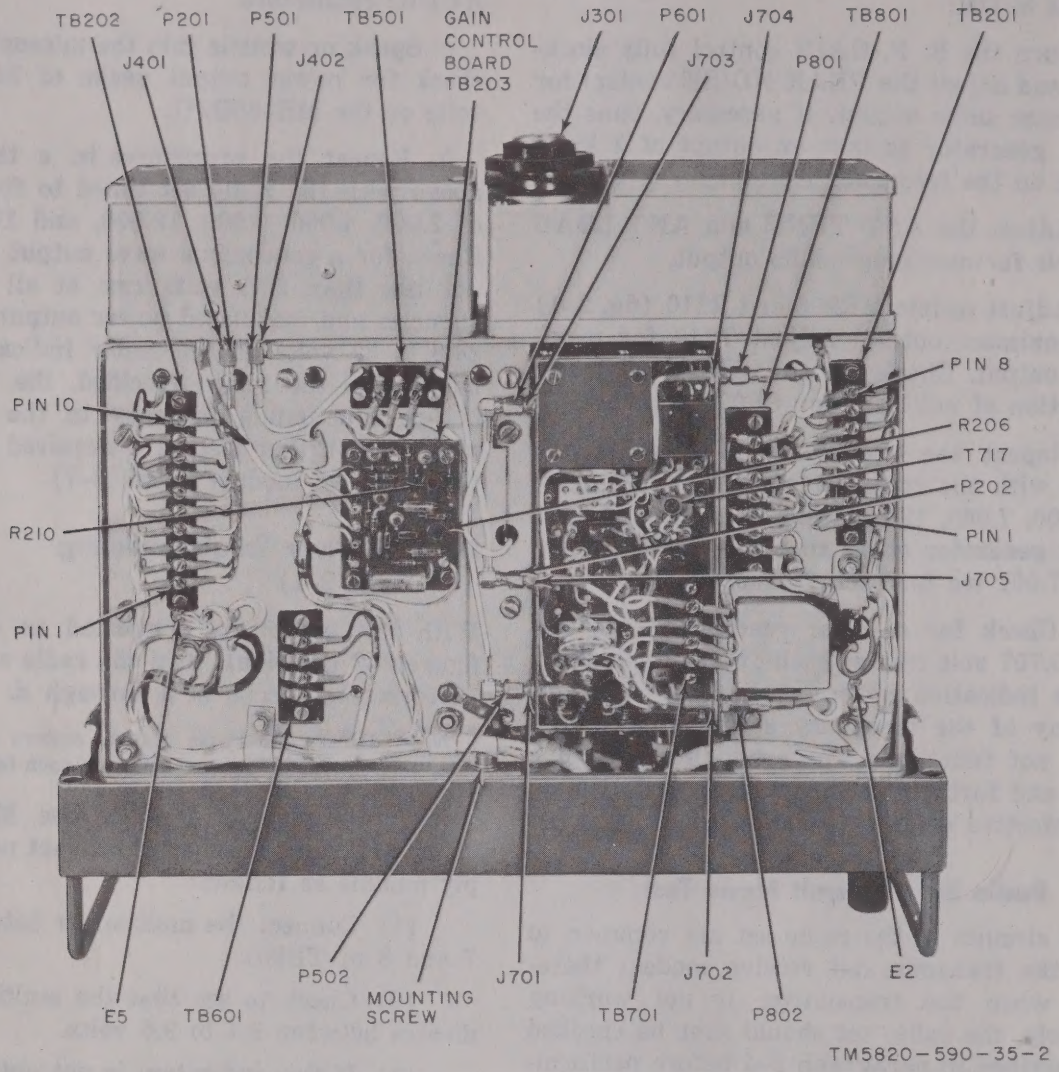

Figure 2-1. Radio set, bottom view, case removed.

(5) If the audio voltage as measured on the ME-30B/U (fig. 2-2) is 0.707 volt rms or greater with this arrangement, the frequency synthesizer is defective. Replace the frequency synthesizer (para 2-12). If no voltage is measured, proceed to *c* below.

c. Rf Module. Check the RF module as follows:

(1) Disconnect P201 from J401 of the IF module.

(2) Connect the AN/URM-25D to J401.

(3) Set the signal generator frequency to 1.749 mc.

(4) Set the signal generator output level to 30 microvolts.

(5) If the audio voltage (as measured on the ME-30B/U) is greater than 0.707 volt rms the RF module is defective. Replace the RF module (para 2-12). If no voltage is measured, proceed to *d* below.

d. IF Audio and Frequency Generator. Check the IF audio and frequency generator; use two AN/URM-25D's (or equivalent).

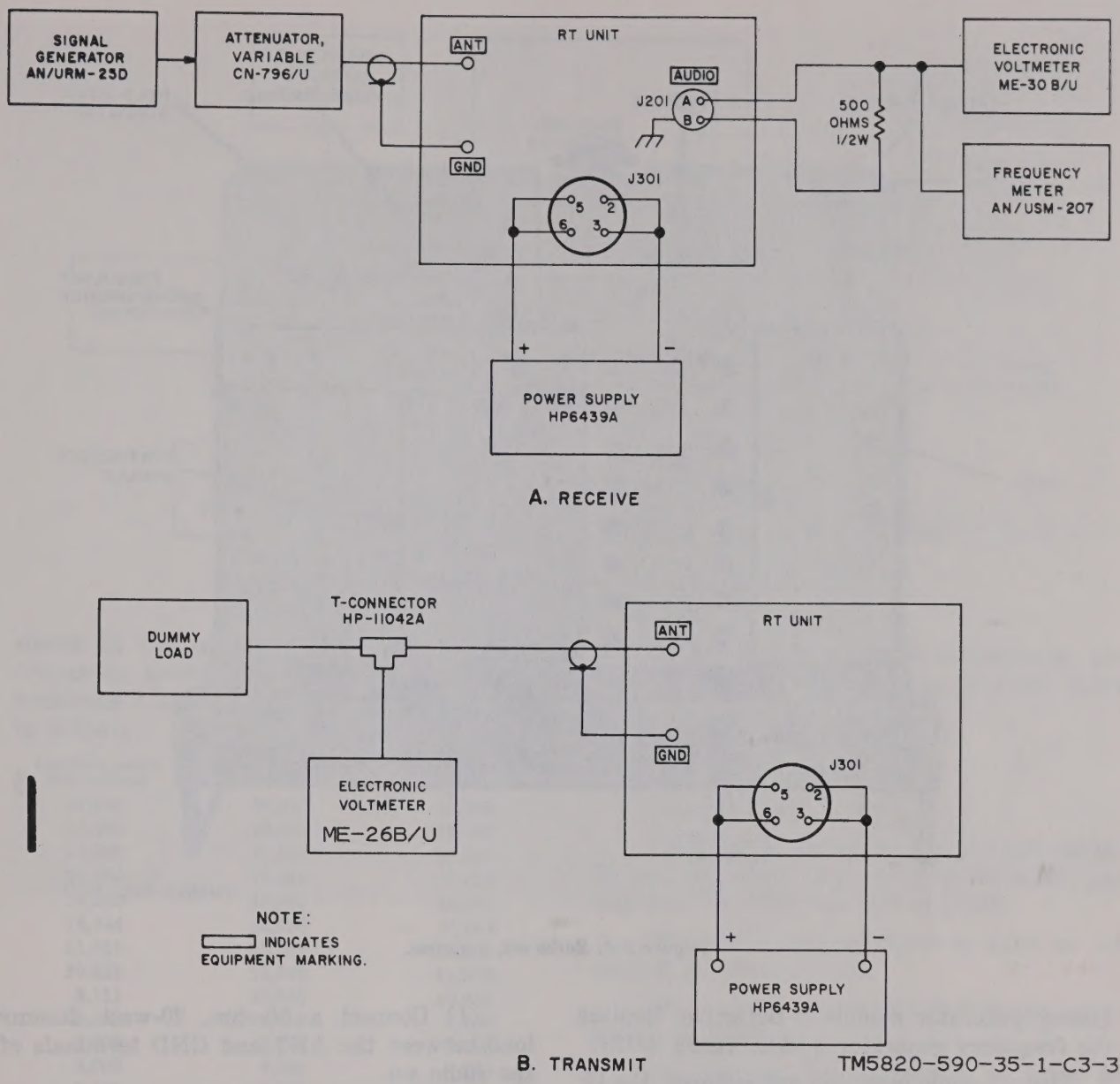

Figure 2–2. Radio set, receive and transmit mode test setup.

(1) Disconnect P201 from J401 of the IF module.

(2) Connect signal generator No. 1 (fig. 2–4) to J401 through the variable attenuator. Adjust the variable attenuator to 20 db.

(3) Set the frequency of signal generator No. 1 to 1.749 mc.

(4) Set the output of signal generator No. 1 to 30 microvolts.

(5) Disconnect P501 from J402 of the IF module.

(6) Connect signal generator No. 2 to J402.

(7) Set the frequency of signal generator No. 2 to 1.750 mc.

(8) Set the output level of signal generator No. 2 to 1 volt rms.

(9) If audio voltage is restored, the fre-

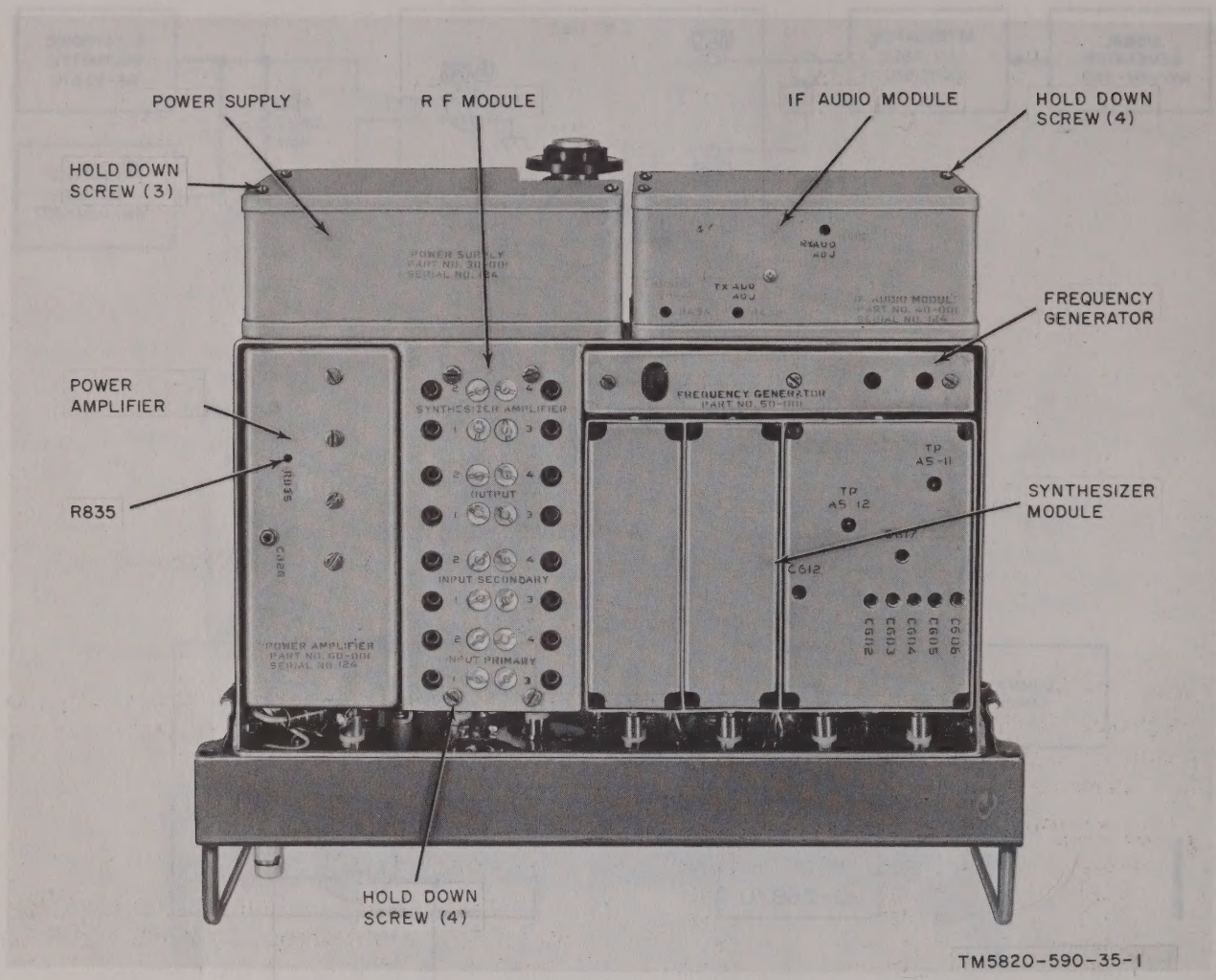

Figure 2–3. Radio set, top view.

quency generator module is defective. Replace the frequency generator module (para 2–12).

(10) If audio output is not restored, the IF audio module is defective. Replace the IF audio module (para 2–12).

2–7. Transmitter Troubleshooting (fig. 2–1)

Connect the radio set to the power supply as shown in figure 2–2 (transmit). Check the radio set in the transmit mode as follows:

a. Power Supply Module. Use Multimeter TS–352B/U, and check the power supply module as follows:

(1) Connect a 50-ohm, 20-watt dummy load between the ANT and GND terminals of the radio set.

(2) Check the power supply module as given in the chart below.

Check point	*Measurement (volts)*	*Limits (volts)*
TB201–7	+9	8.4 to 9.6
TB201–5	+12, transmit	10.5 to 17
TB201–3	+40, transmit	39.0 to 44.0

Note. Rotate OFF-ON-TUNE control to TUNE position when measuring +12 volts and +40 volts.

(3) If any of the voltage measurements in (2) above are not indicated, the power supply module is defective. Replace the power supply module (para 2–12).

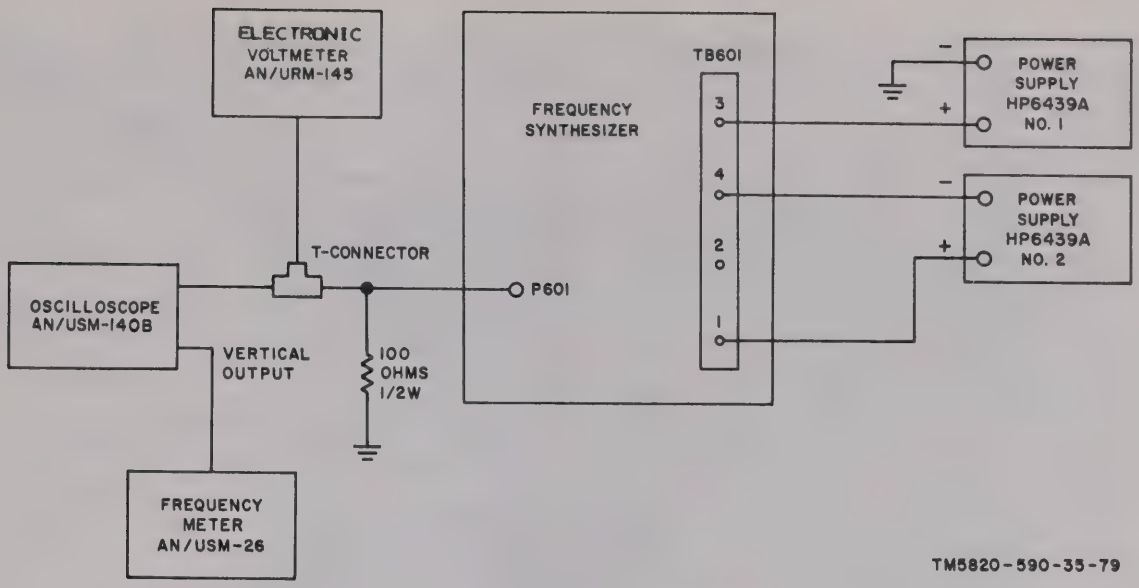

Figure 3–2. Frequency synthesizer, troubleshooting test setup.

shown in the following chart. The *calibrate frequency* setting should be obtained when terminals 1 and 2 of TB601 are connected as in *h* above.

Oscillator switch digit settings	*Calibrate frequency (±10 cps)*	*Output frequency (±50 cps)*
17,999	19,740	19,749
16,888	18,630	18,638
15,888	17,520	17,527
14,666	16,410	16,416
13,555	15,300	15,305
12,444	14,190	14,194
11,333	13,080	13,083
10,222	11,970	11,972
9,111	10,860	10,861
8,000	9,750	9,750
7,000	8,750	8,750
6,000	7,750	7,750
5,000	6,750	6,750
4,000	5,750	5,750
3,000	4,750	4,750
2,000	3,750	3,750

p. Check to see that the output frequency is as shown in the chart below.

q. If any of the output frequencies are not as indicated, perform the alignment instructions (para 3–22).

r. If a synthesizer stage cannot be aligned (fig. 3–31) or if the RF voltage measured is not as indicated, check the stage that is being aligned for defective circuit components. Replace defective components as required (para 3–9).

3–3. RF Module

a. Receive Test.

(1) Connect Generator, Signal AN/GRM–50 (or equivalent) through a 20-db match pad (fig. 3–1) to J702 (fig. 3–8 and 3–9).

(2) Set the AN/GRM–50 to 2,001 kc ±1 percent at 100 millivolts.

(3) Connect an AN/URM–25D (or equivalent) to J703.

(4) Set the AN/URM–25D to 3,750 kc ±0.005 percent at 100 millivolts rms.

(5) Connect a 100-ohm, ½-watt resistor to J705.

(6) Connect Electronic Voltmeter AN/URM–145 (or equivalent) across the load.

(7) Connect the positive output terminal of Power Supply HP6439A (or equivalent) to terminal 3 of TB701, and connect the negative terminal to terminal 4 of TB701.

(8) Connect a voltage divider consisting of a 1-kilohm resistor and a 5-kilohm potentiometer across the output of the power supply.

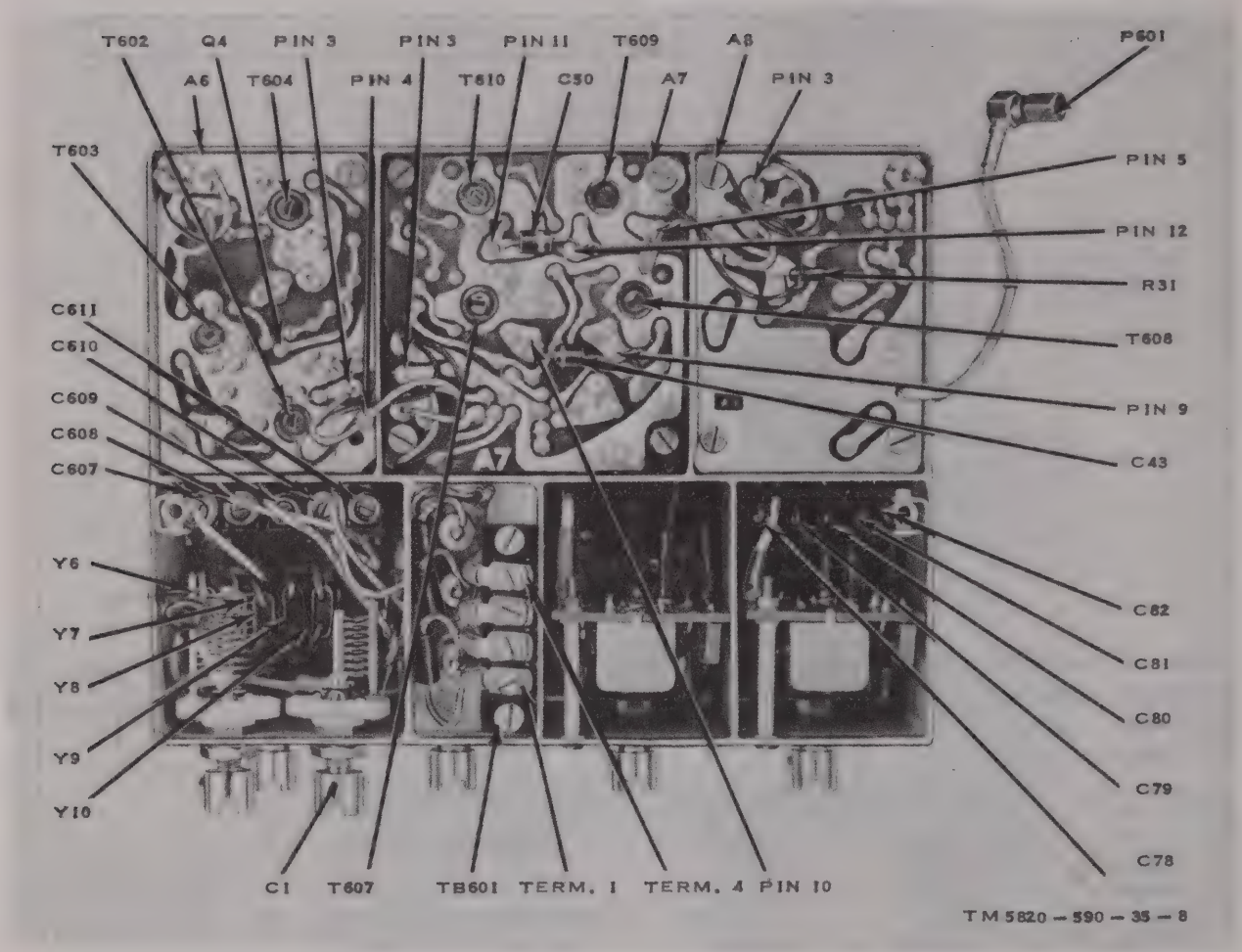

Figure 3–3. Frequency synthesizer module, bottom view.

(9) Connect the arm of the 5-kilohm potentiometer to terminal 2 of TB701.

(10) Set bandswitch S1 (fig. 3–9) to band 1 (fully counterclockwise).

(11) Set the power supply for an output of 9 volts ±5 percent, 100 ma.

(12) Adjust the 5-kilohm potentiometer for a maximum output as indicated on the AN/URM–145.

(13) Adjust C701 (fig. 3–9) for a maximum indication on the AN/URM–145.

(14) Check to see that the output across the load is 30 millivolts rms or greater.

(15) Repeat the test for other frequency bands, as shown in the chart below.

AN/URM–25D frequency (kc)	*Band*	*AN/GRM–50 frequency (kc)*
3,750	1	2,001
5,750	2	4,001
8,750	3	7,001
13,750	4	12,001

(16) If an output of less than 30 millivolts is indicated for any of the frequencies given in (15) above, leave the test equipment connected in this manner, and perform alignment procedures for the RF module (para 3–23).

(17) If the RF module cannot be aligned as described in paragraph 3–23, connect the test equipment as shown in figure 3–8 (receive mode), and perform the procedures given in (*a*) through (*j*) below.

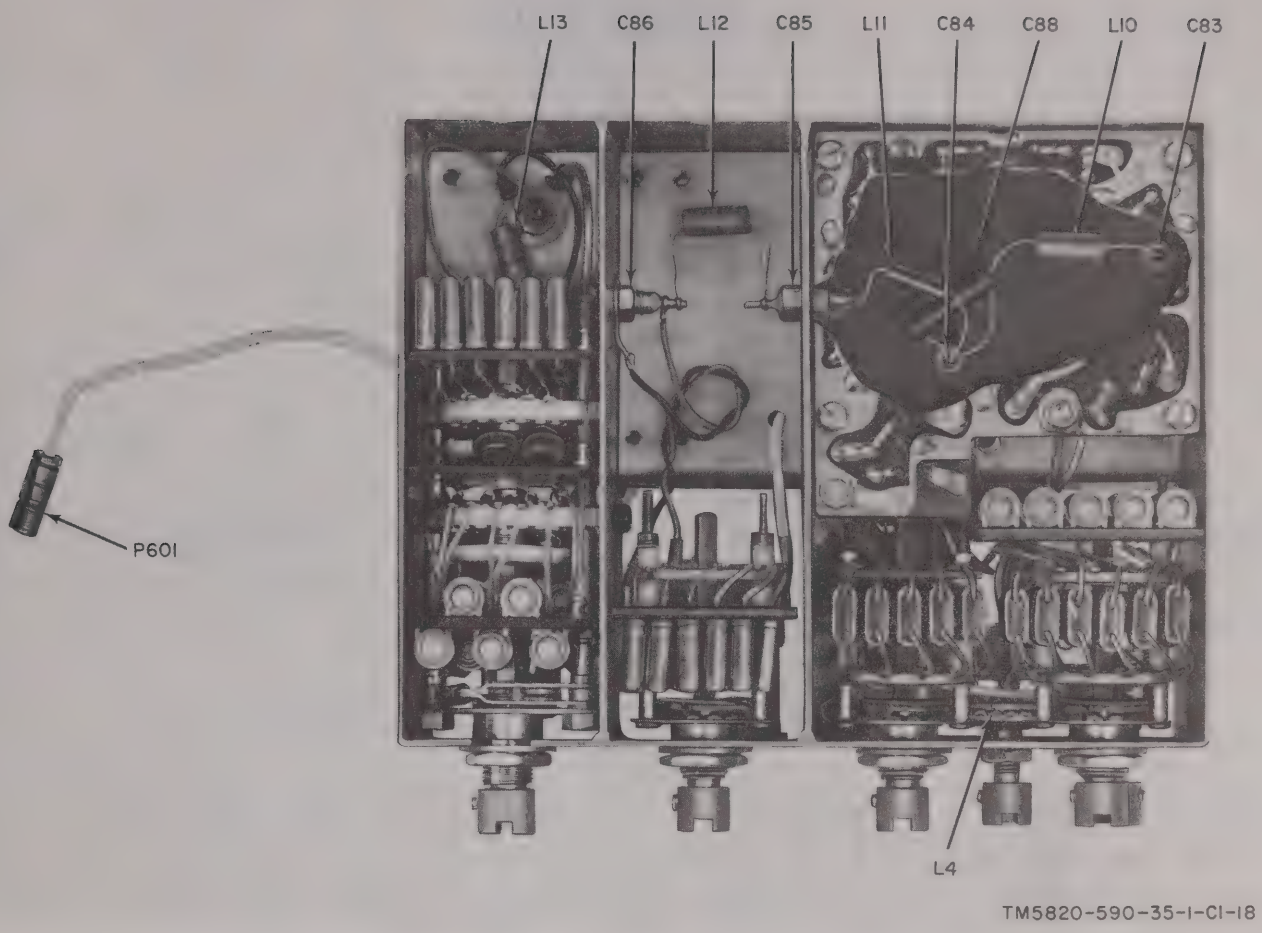

Figure 3–5. Frequency synthesizer module, top view, circuit board A5 removed.

(*j*) Using Multimeter ME–26B/U (or equivalent), check RF amplifier Q1 and synthesizer amplifier Q2 as shown in the chart below.

		Approx voltage	
Transistor	*E*	*B*	*C*
Q1	+ 0.3	+ 0.16	+ 8
Q2	+ 0.85	+ 1.4	+ 5.7

NOTE

Figures 3–10 and 3–11 show the physical location of the components in the RF module.

b. Transmit Mode.

(1) Connect a 100-ohm, 1/2-watt resistor to J704 (fig. 3–8).

(2) Connect Electronic Voltmeter AN/URM–145 (or equivalent) across the load resistor.

(3) Connect the Power Supply HP6439A No. 1 positive lead to pin 3 of TB701 and the negative lead to pin 4 of TB701 (fig. 3–9).

Connect a voltage divider consisting of a 1 kilohm resistor and a 5 kilohm potentiometer across the output of power supply No. 1 with the arm of the 5 kilohm potentiometer connected to terminal 2 of TB 701 (fig. 3–8 and 3–9).

(4) Connect the Power Supply HP6439A/U No. 2 positive lead to pin 1 of TB701 and the negative lead to pin 4 of TB701.

(5) Set power supply No. 2 to 12 volts ±10 percent, 500 ma.

(6) Set power supply No. 1 to 9 volts ±5 percent, 100 ma.

(7) Connect the AN/GRM–50 (or equivalent) through the 20-db match pad (fig. 3–1) to J705.

(8) Set the AN/GRM–50 for an output frequency of 1,750 kc at 260 millivolts.

(9) Connect the AN/URM–25D (or equivalent) to J703 (fig. 3–8).

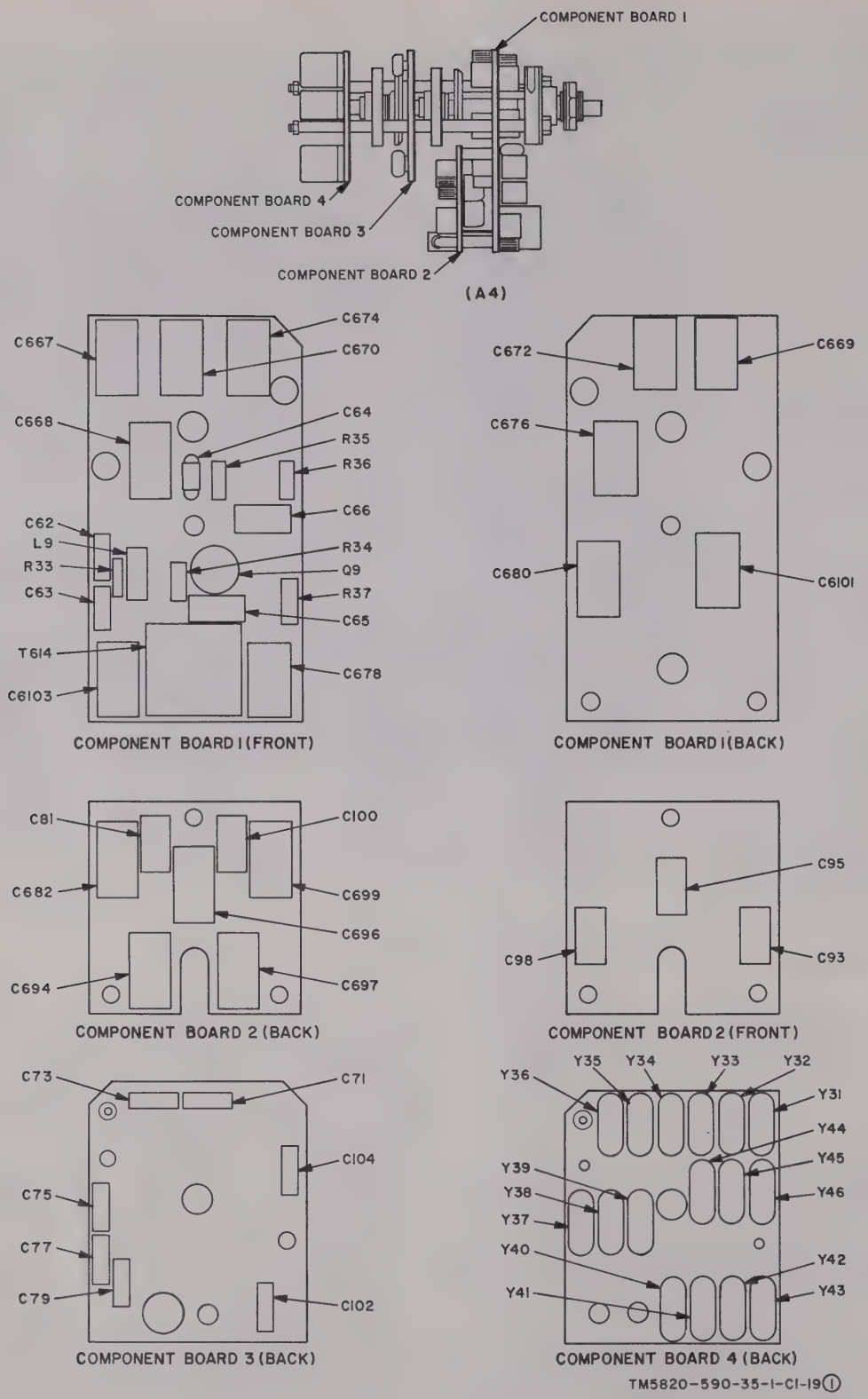

Figure 3-6①. Frequency synthesizer module, switch components board (part 1 of 2).

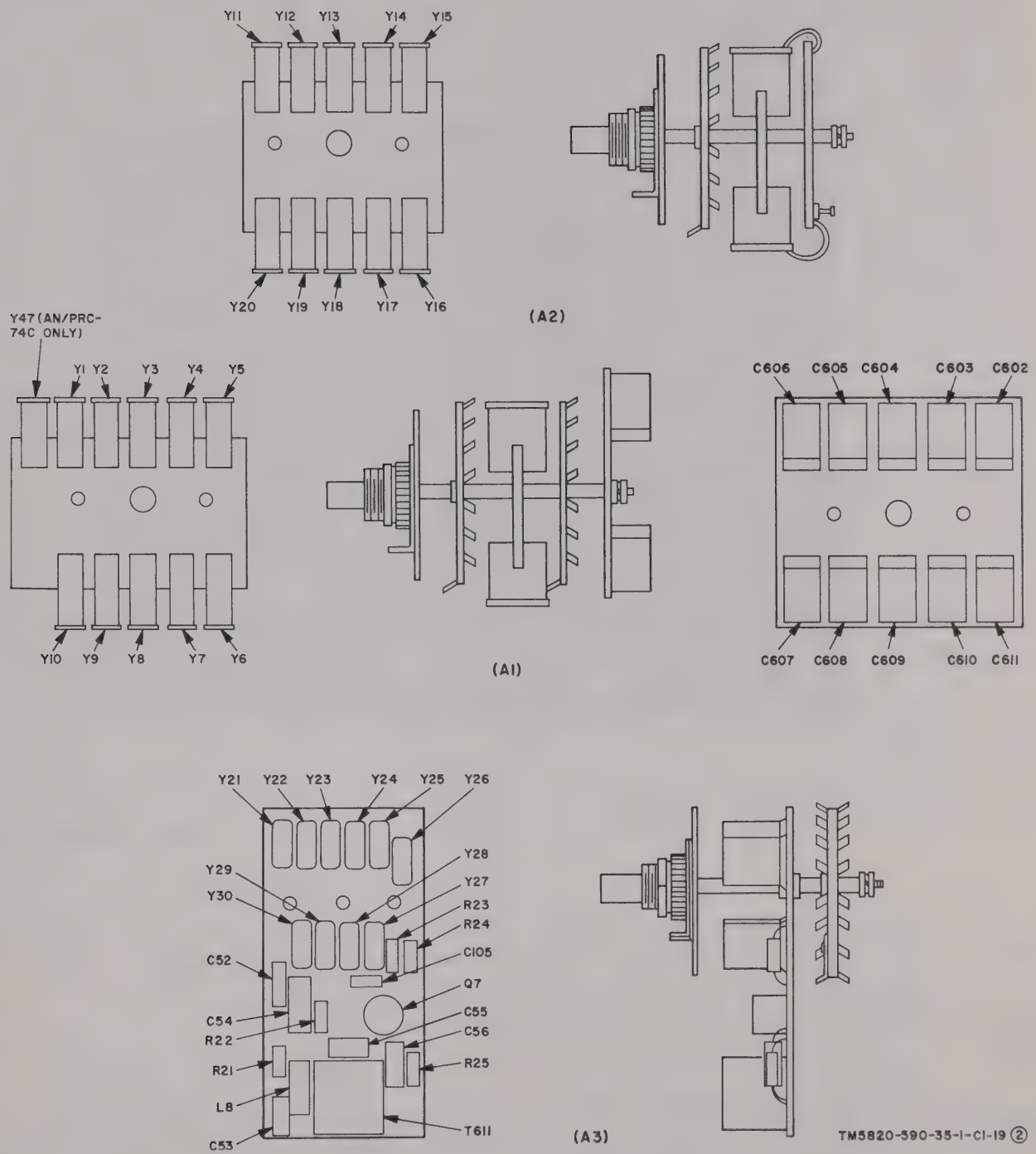

Figure 3-6②. Frequency synthesizer module, switch component boards (part 2 of 2).

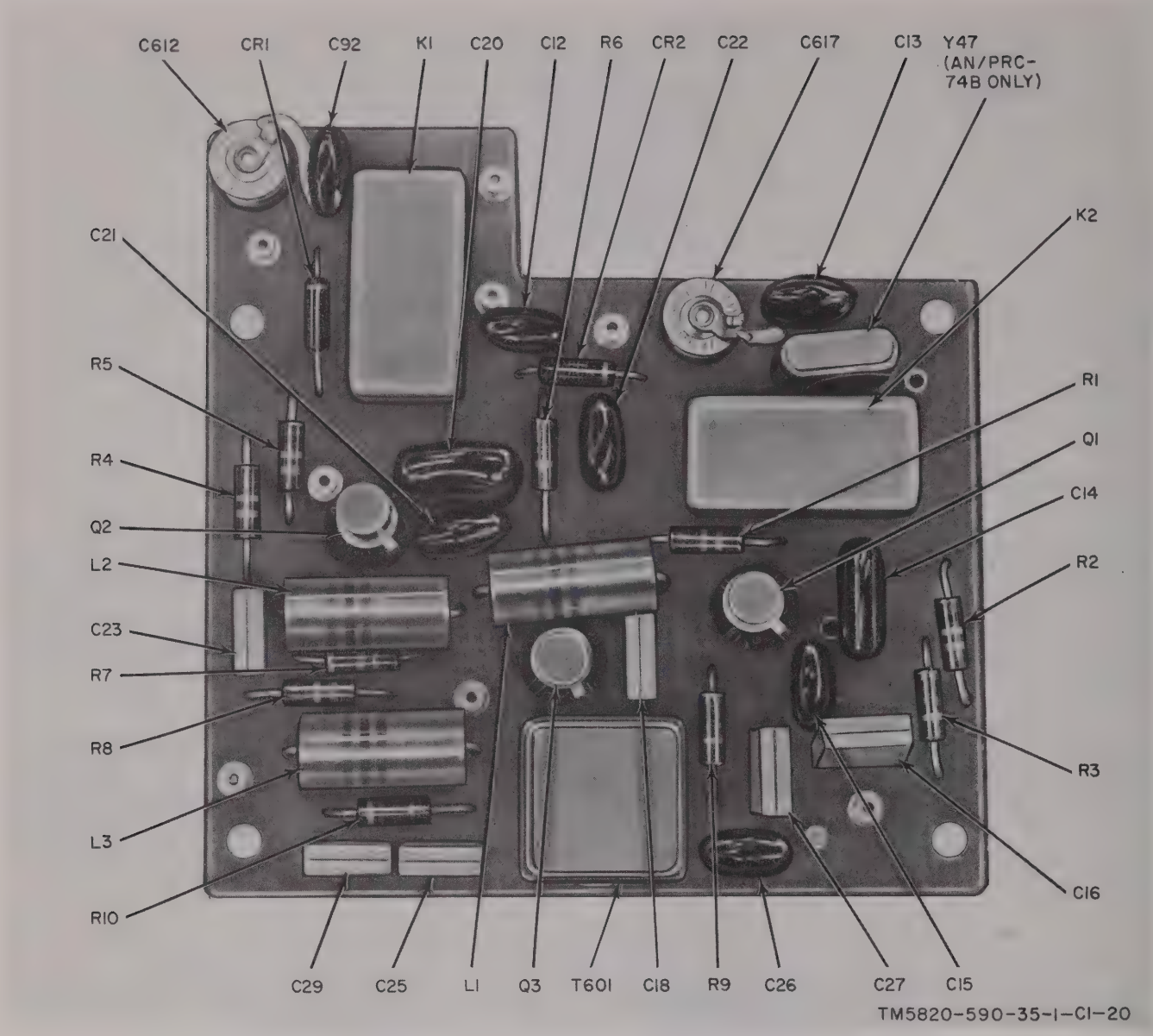

Figure 3-7. Circuit Board A5, location of components.

(10) Set the AN/URM-25D for an output frequency of 3,750 kc at 100 millivolts.

(11) Set bandswitch S1 (fig. 3-9) to band 1 (fully clockwise) and adjust the 5 kilohm potentiometer for maximum output as indicated on the AN/URM-145.

(12) Adjust C701 for maximum output as indicated on the AN/URM-145.

(13) Check to see that the output at J704 is 70 millivolts, minimum.

(14) Repeat the tests for frequencies in other bands as shown in the chart below, adjusting the 5 kilohm potentiometer and C701 for maximum output for each setting.

AN/URM-25D frequency (kc)	*Band*
3,750	1
5,750	2
8,750	3
13,750	4

(15) If an output of less than 70 millivolts rms is indicated for any of the frequencies shown in (14) above, leave the test equipment connected as it is and perform alignment procedures for the RF module (para 3-23).

(16) If the RF module cannot be aligned

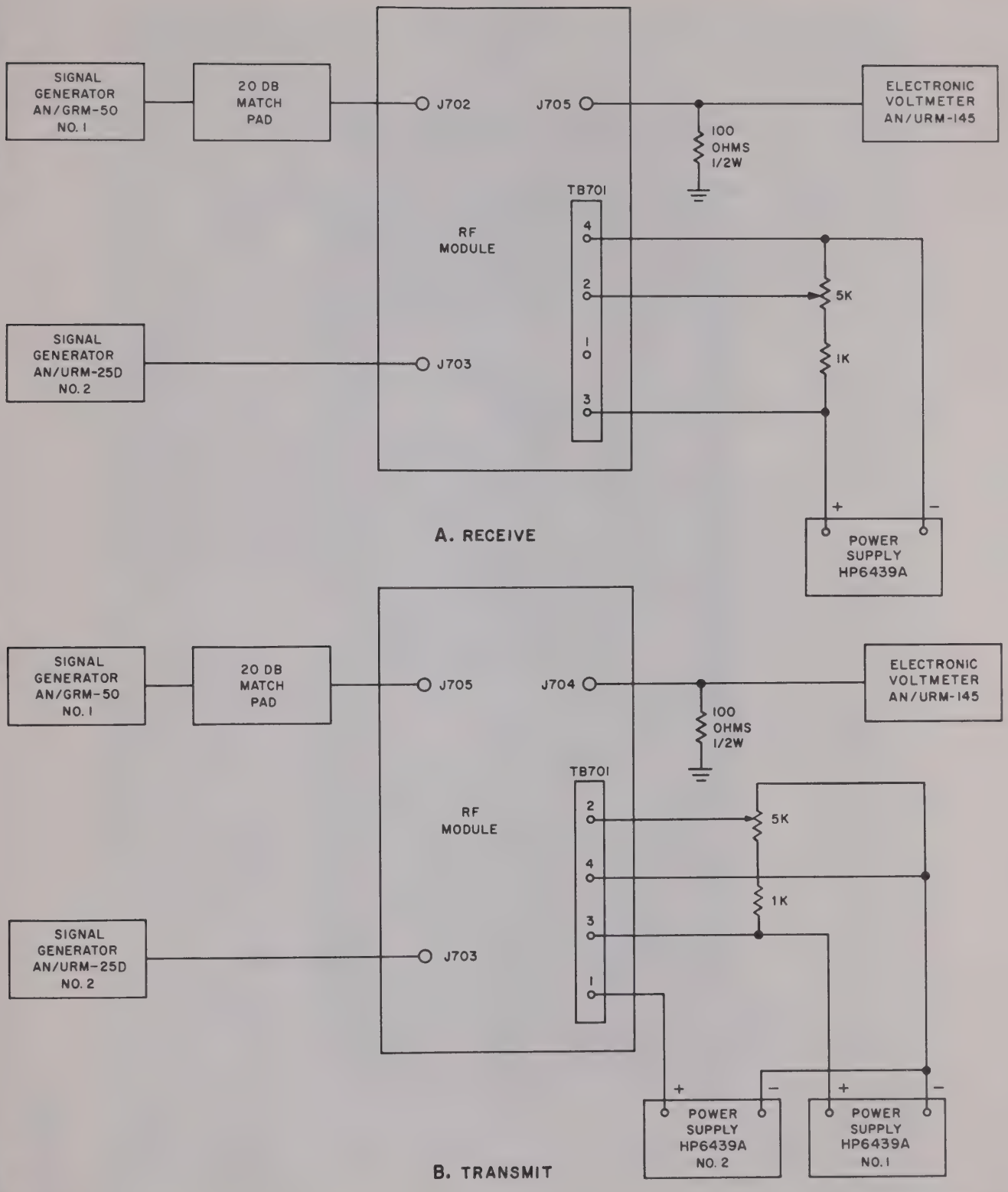

Figure 3–8. RF module troubleshooting test setup.

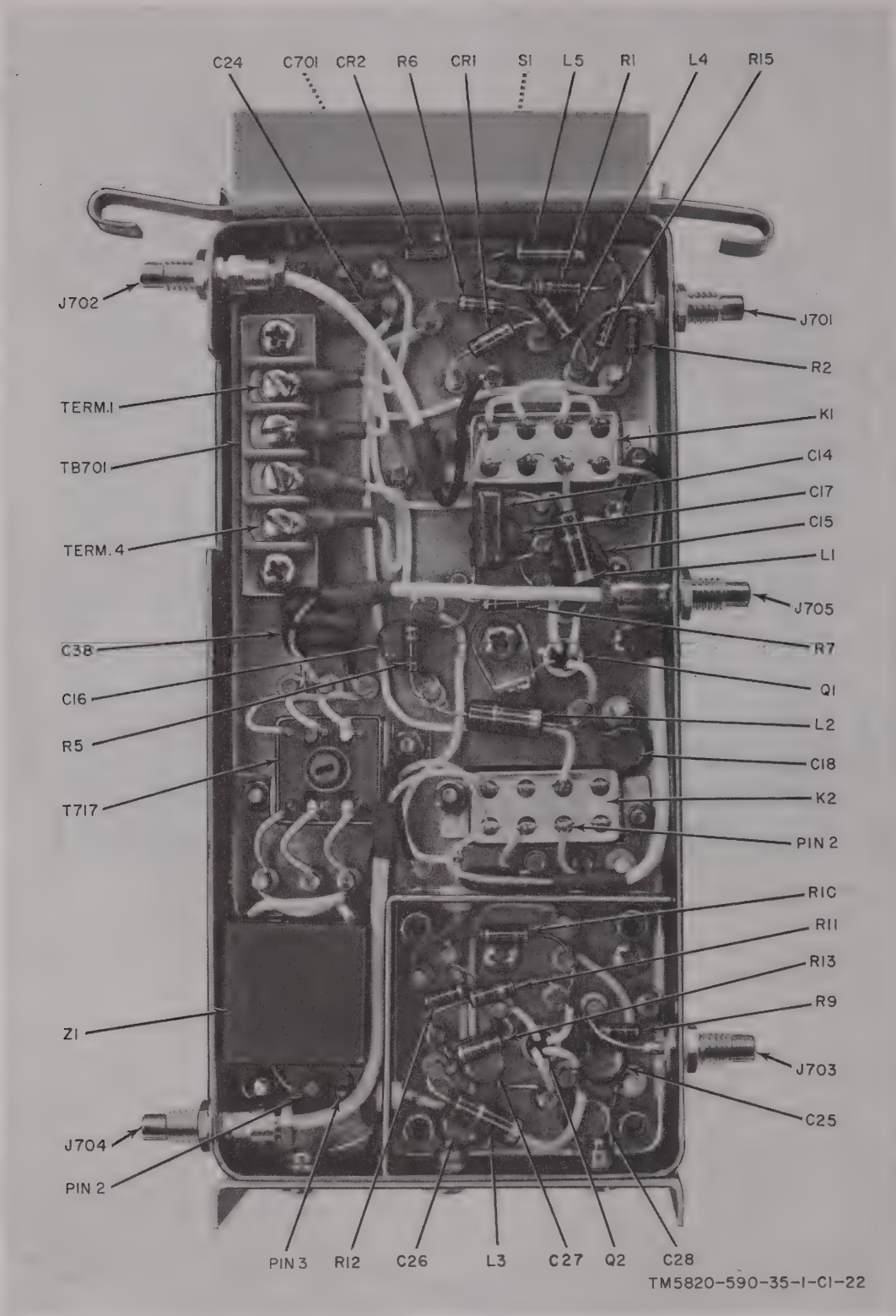

Figure 3–9. RF module, top view.

c. Procedure.

Step No.	Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	*AN/GRM–50* POWER: ON	*RT–794B/PRC–74* MC (MHz): 2	*a.* Adjust AN/GRM–50 for frequency beat note of approximately 1 kc in audio output.	*a.* None.
	VERNIER ATTENUATOR: 7 micro-volts.	100 KC (KHz): 0 10 KC (KHz): 0	*b.* Turn R. F. GAIN control fully clockwise.	*b.* None.
	RANGE: 2.001 cm *HP6439A*	1 KC (KHz): 0 OFF-ON-TUNE: ON	*c.* Adjust PEAK NOISE, ANT LOAD, and ANT TUNE controls for maximum audio output.	*c.* None.
	VOLTAGE ADJUST: 12V.		*d.* Adjust R206 and R210 on TB-203 (fig. 2–1) for maximum audio output. Adjust T717 for maximum audio output.	*d.* None.
2	*AN/URM–145* RANGE: 1.0 VOLTS	None	*a.* Connect AN/URM–145 to pins A and B of J202 (AUDIO connector).	*a.* AN/URM–145 indication should be not less than 0.707 volt rms.
			b. Repeat test with rt unit frequency controls set to 4.000, 7.000, and 12.000 mc, and AN/GRM–50 set to frequencies of 4.001, 7.001, and 12.001 mc. Do not readjust R206, R210, and T717.	*b.* AN/URM–145 indications should not be less than 0.707 volt rms at all frequency settings.

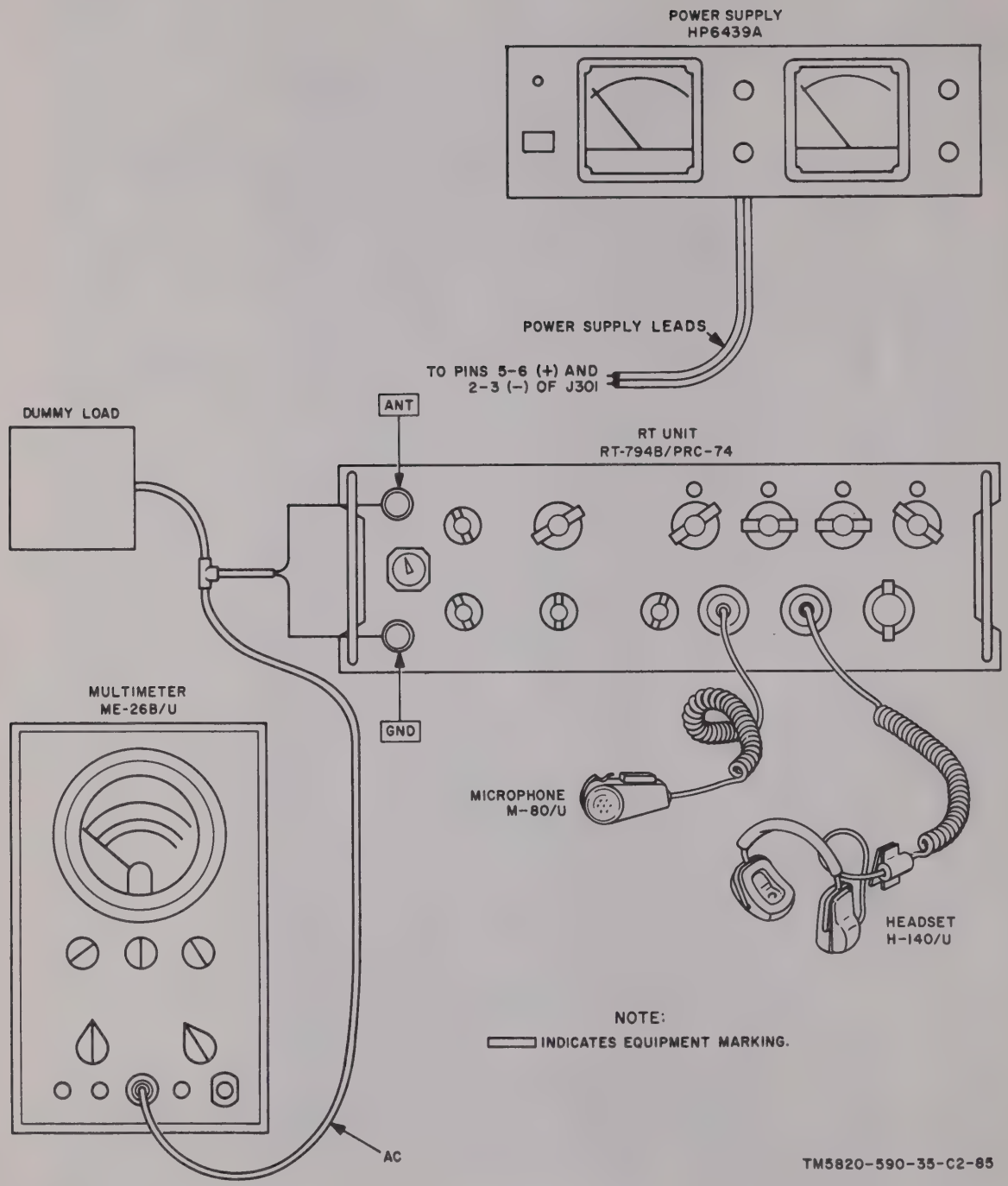

Figure 4-2. Radio set transmit test.

CHAPTER 4.1

DEPOT MAINTENANCE

Section I. POWER AMPLIFIER MODULE

4.1–1. Test Equipment and Additional Equipment Required

The test equipment and additional equipment required for depot maintenance of the power amplifier module is listed in *a* and *b* below.

a. Test Equipment.

(1) Generator, Signal AN/GRM–50.

(2) Multimeter ME–26B/U.

(3) Multimeter TS–352B/U (three required).

(4) Power Supply, Hewlett-Packard HP 6439A (three required).

b. Additional Equipment.

(1) Resistor, 50-ohm, 20-watt.

(2) Hewlett-Packard TEE Connector No. 11042A (T-connector).

4.1–2. Power Amplifier Module Troubleshooting

a. Connect the test equipment to the power amplifier module as shown in figure 4.1–1.

b. Set power supply No. 1 for 12.0 volts ±0.6, 200 ma.

c. Set power supply No. 2 for 9.0 volts ±0.45, 400 ma.

d. Set power supply No. 3 for 40 volts ±2, 1 ampere.

e. Set the AN/GRM–50 to 2 mc at 10 mv.

f. Set Multimeter TS–352B/U No. 1 to the 1-MA scale, Multimeter TS–352B/U No. 2 to the 10-VDC scale, and Multimeter TS–352B/U No. 3 to the 1,000-MA scale.

g. Adjust the AN/GRM–50 output for an indication of 850 ma on multimeter No. 3.

h. Adjust L807 and C825 (fig. 4.1–2) for a maximum indication on multimeter No. 1.

i. Adjust the AN/GRM–50 output for an indication of 24.5 volts ac on Multimeter ME–26B/U (fig. 4.1–1).

j. The input level from the signal generator shall be equal to or less than 70 mv.

k. Multimeter No. 1 shall indicate 0.5 to 1.0 ma.

l. Multimeter No. 3 shall indicate no more than 850 +0, -150 ma.

m. Repeat the procedures in *g* through *l* above for each of the following frequencies: 3.5 mc, 6 mc, 10.5 mc, and 18 mc.

n. Reduce the output of power supply No. 3 to 30 volts. Multimeter ME–26B/U shall indicate less than 5 volts ac.

o. If the ME–26B/U indications are not within tolerance, perform the alignment procedure for the power amplifier module (para 4.1–5).

p. If the power amplifier cannot be aligned, check the power amplifier module as follows:

(1) Unsolder the wire from relay K1, pin A2, (fig. 4.1–3) (connected to junction of C825 and L807), and connect a 100-ohm, 20-watt load between pin A2 and ground.

(2) Turn on all the power supplies.

(3) Set the AN/GRM–50 for an output of 6 mc at 20 to 40 mv.

(4) Connect Multimeter ME–26B/U between the yellow primary winding of transformer T1 and ground. The ME–26B/U indication shall be approximately 2.1 volts ac.

(5) If the ME–26B/U indication obtained in (4) above is low, check for defective components in the preamplifier. Approximate emitter voltages of Q1, Q2, and Q3 (fig. 4.1–4)

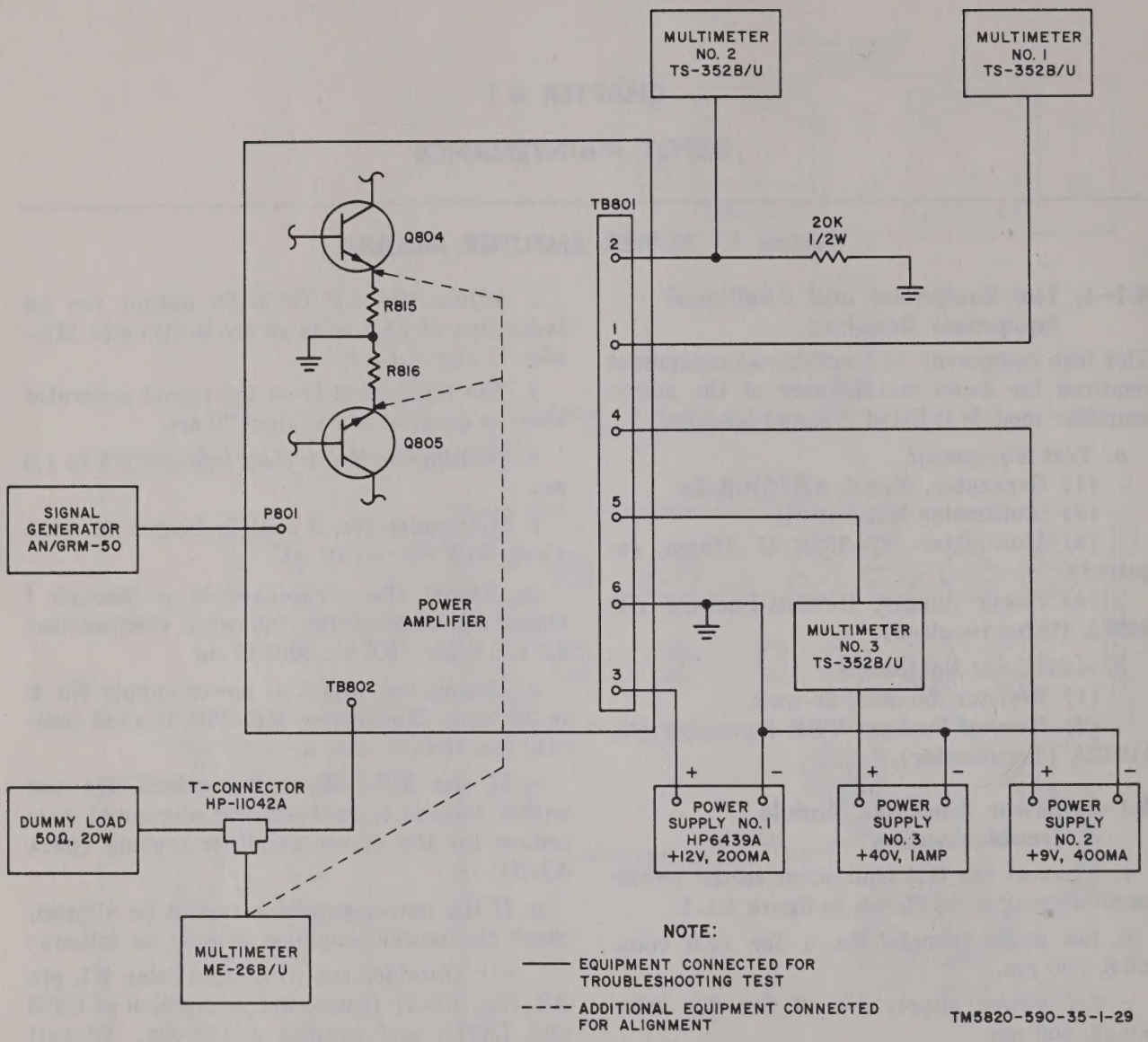

Figure 4.1–1. Power amplifier module, test setup.

shall be +0.5 volt, +1.2 volt, and +1.2 volt respectively. Replace defective transistors.

(6) Disconnect Multimeter ME–26B/U.

(7) Disconnect the 100-ohm load ((1) above), and solder the wire to K1, pin A2 (from the junction of L807 and C825).

(8) Disconnect the AN/GRM–50 from P801 (fig. 3–17).

(9) Multimeter No. 3 shall indicate less than 100 ma.

(10) If the multimeter indication ((9) above) is greater than 100 ma, check for a defective transistor Q4 or Q5 (fig. 4.1–3), or bias network R12, R13, and R14 (figs. 4.1–4 and 4.1–3).

(11) If no current flow is indicated ((9) above) check for defective components in the Q4 and Q5 circuits.

(12) Connect the AN/GRM–50 to P801 (fig. 4.1–5), and set the output for 6 mc at 30 mv.

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